#4

SEQUENCE LISTING

<110> Rodriguez, Moses
Miller, David J.
Pease, Larry R.

<120> Human IgM Antibodies and Diagnostic and Therapeutic Uses Thereof Particularly in the Central Nervous System

<130> 1199-1-005CIP2

<140> 10/010,729
<141> 2001-11-13

<150> 09/730,473
<151> 2000-12-05

<150> 09/580,787
<151> 2000-05-30

<150> 09/322,862
<151> 1999-05-28

<150> 08/779,784
<151> 1997-01-07

<150> 08/692,084
<151> 1996-08-08

<150> 08/236,520
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tgcaaggctt ctggttacac cttcacaagc tacgatataa actgggtgaa gcagaggcct 180
ggacagggac ttgagtggat tggatggatt tatcctggag atggtagtac taagtacaat 240
gagaaattca agggcaaggc cacactgact gcagacaaat cctccagcac agcctacatg 300
cagctcagca gcctgacttc tgagaactct gcagtctatt tctgtgcaag aggggccagg 360
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<211> 395
<212> DNA
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<400> 2
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tgcacagtct ctggtttctc attaactagc tatggtgtac actgggttcg ccagtctcca 180
ggaaagggtc tggagtggct gggagtgata tggagtggtg gaagcacaga ctataatgca 240
gctttcatat ccagactgag catcagcaag gacgcttcca agagccaagt tttctttaaa 300
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actggggtca aggaacctca gtcaccgtct cctca 395

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<212> DNA
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tgtgcaactt ctgggttcac cttcagtgat ttctacatgg agtgggtccg ccagcctcca 180
gggaagagac tggagtggat tgctgcaagt agaaagaaag ctaatgatta taaaacagag 240
tacagtgcat ctgtgaaggg gcggttcacc gtctccagag acacttccca aagcatcctc 300
taccttcaga tgaatgccct gagagatgag gacactgcca tttattactg tgcaagagat 360
gcacggcagc tcgggctccc gtttgcttac tggggccaag ggactctggt cactgtctct 420
gca 423

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<212> DNA
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ttgacctgca aggccagtga gaatgtggtt acttatgttt cctggtatca acagaaacca 180
gagcagtctc ctaaactgct gatatacggg gcatccaacc ggtacactgg ggtccccgat 240
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gaagaccttg cagattatca ctgtggacag ggttacagct atccgtacac gttccgaggg 360
gggaccaagc tggaaataaa acgg 384

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<211> 402
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agatgtgaca tccagatgac ccagtctcca tcctccttat ctgcctctct gggagaaaga 120
gtcagtctca cttgtcgggc aagtcaggac attggtagta gcttaaactg gcttcagcag 180
gaaccagatg gaactattaa acgcctgatc tacgccacat ccagtttaga ttctggtgtg 240
cccaaaaggt tcagtggcag taggtctggg tcagattatt ctctcaccat cagcagcctt 300
gagtctgaag attttgtaga ctattactgt ctacaatatg ctagttctcc gtacacgttc 360
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atcacctgca aggccagtca ggatgtgagt actgctgtag cctggtatca acagaaacca 180
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<211> 119
<212> PRT
<213> Homo sapiens

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            20   25   30
Gly Met His Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Val
        35   40   45
Ala Val Ile Ser Tyr Asp Gly Ser Arg Lys Tyr Tyr Ala Asp Ser Val
    50   55   60
Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ser Lys Asn Thr Leu Tyr
65   70   75   80
Leu Gln Met Asn Ser Leu Thr Ala Asp Asp Thr Ala Val Tyr Tyr Cys
                85   90   95
Ala Lys Gly Val Thr Gly Ser Pro Thr Leu Asp Tyr Trp Gly Gln Gly
            100   105   110
Thr Leu Val Thr Val Ser Ser
        115

<210> 8
<211> 357
<212> DNA
<213> Homo sapiens

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tcctgtgcag cctctggatt caccttcagt agctatggca tgcactgggt ccgccaggct 120
ccaggcaagg ggctggagtg ggtggcagtt atatcatatg atggaagtaa taaatactat 180
gcagactccg tgaagggccg attcaccatc tccagagaca attccaagaa cacgctgtat 240
ctgcaaatga acagcctgag agctgaggac acggctgtgt attactgtgc gaaagaggtg 300
actgctattc cctactttga ctactggggc cagggaaccc tggtcaccgt ctcctca 357

<210> 9
<211> 114
<212> PRT
<213> Homo sapiens

<400> 9
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 1   5   10   15
Lys Val Thr Ile Ser Cys Ser Gly Ser Ser Ser Asn Ile Gly Asn Asn
            20   25   30

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Phe Val Ser Trp Tyr Gln Gln Leu Pro Gly Thr Ala Pro Arg Leu Leu
        35                  40                  45
Ile Tyr Asp Ile Thr Lys Arg Pro Ser Gly Ile Pro Asp Arg Phe Ser
    50                  55                  60
Gly Ser Lys Ser Gly Thr Ser Ala Thr Leu Gly Ile Thr Gly Leu Gln
65                  70                  75                  80
Thr Gly Asp Glu Ala Asp Tyr Tyr Cys Gly Thr Trp Asp Ser Ser Leu
                85                  90                  95
Ser Ala Val Val Phe Gly Gly Gly Thr Lys Leu Thr Val Leu Gly Gln
            100                 105                 110
Pro Lys
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<210> 10
<211> 337
<212> DNA
<213> Homo sapiens

<400> 10
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tcctgctctg gaagcagctc caacattggg aataattatg tatcctggta ccagcagctc 120
ccaggaacag cccccaaact cctcatttat gacaataata agcgaccctc agggattcct 180
gaccgattct ctggctccaa gtctggcacg tcagccaccc tgggcatcac cggactccag 240
actggggacg aggccgatta ttactgcgga acatgggata gcagcctgtg tggtattcgg 300
cggagggacc aagctgaccg tcctaggtca gcccaag 337

<210> 11
<211> 121
<212> PRT
<213> Homo sapiens

<400> 11
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 1               5                  10                  15
Thr Leu Ser Leu Thr Cys Thr Val Ser Gly Gly Ser Ile Ser Ser Tyr
            20                  25                  30
Tyr Trp Ser Trp Ile Arg Gln Pro Pro Gly Lys Gly Leu Glu Trp Ile
        35                  40                  45
Gly Tyr Ile Tyr Tyr Ser Gly Ser Thr Asn Tyr Asn Pro Ser Leu Lys
    50                  55                  60
Ser Arg Val Thr Ile Ser Val Asp Thr Ser Lys Asn Gln Phe Ser Leu
65                  70                  75                  80
Lys Leu Ser Ser Val Thr Ala Ala Asp Thr Ala Val Tyr Tyr Cys Ala
                85                  90                  95
Arg Ser Ala Gln Gln Gln Leu Val Tyr Tyr Phe Asp Tyr Trp Gly Gln
            100                 105                 110
Gly Thr Leu Val Thr Val Ser Ser Gly
        115                 120
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<210> 12
<211> 370
<212> DNA
<213> Homo sapiens

<400> 12

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ccagggaagg gactggagtg gattgggtat atctattaca gtgggagcac caactacaac 180
ccctccctca agagtcgagt caccatatca gtagacacgt ccaagaacab ccagttctcc 240
ctgaagctga gctctgtgac cgctgcggac acggccabcg tgtattactg tgcgaggtcg 300
gcacagcagc agctggtata ctacdtttga ctactggggc cagggaaccc tggtcaccgt 360
ctcctcaggg 370

<210> 13
<211> 119
<212> PRT
<213> Homo sapiens

<400> 13
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 1   5   10   15
Glu Arg Ala Thr Ile Asn Cys Lys Ser Ser Gln Ser Val Leu Tyr Ser
            20   25   30
Ser Asn Asn Lys Asn Tyr Leu Ala Trp Tyr Gln Gln Lys Pro Gly Gln
        35   40   45
Pro Pro Lys Leu Leu Ile Tyr Trp Ala Ser Thr Arg Glu Ser Gly Val
    50   55   60
Pro Asp Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr
65   70   75   80
Ile Ser Ser Leu Gln Ala Glu Asp Val Ala Val Tyr Tyr Cys Gln Gln
                85   90   95
Tyr Tyr Ser Thr Pro Leu Thr Phe Gly Pro Gly Thr Lys Val Asp Ile
            100   105   110
Lys Arg Thr Val Ala Ala Pro
        115

<210> 14
<211> 357
<212> DNA
<213> Homo sapiens

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tggtaccagc agaaaccagg acagcctcct aagctgctca tttactgggc atctacccgg 180
gaatccgggg tccctgaccg attcagtggc agcgggtctg ggacagattt cactctcacc 240
atcagcagcc tgcaggctga agatgtggca gtttattact gtcagcaata ttatagtact 300
cctctcactt tcggccctgg gaccaaagtg gatatcaaac gaactgtggc tgcacca 357

<210> 15
<211> 112
<212> PRT
<213> Homo sapiens

<400> 15
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 1   5   10   15
Gly Phe Ile Phe Ser Ser Tyr Gly Met His Trp Val Arg Gln Val Pro
            20   25   30
Gly Lys Gly Leu Glu Trp Val Ala Val Ile Trp Tyr Asp Gly Ser Asp
        35   40   45

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Lys Tyr Tyr Val Asp Ser Val Lys Gly Arg Phe Thr Ile Ser Arg Asp
    50                  55                  60
Asn Ser Lys Asn Thr Leu Tyr Leu Gln Met Asn Ser Leu Arg Ala Glu
65                  70                  75                  80
Asp Thr Ala Val Tyr Tyr Cys Ala Arg Asp Arg Ser Ser Gly Trp Tyr
                85                  90                  95
Trp Ser Cys Asp Ser Trp Gly Gln Gly Thr Leu Val Ile Val Ser Ser
            100                 105                 110
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<210> 16
<211> 338
<212> DNA
<213> Homo sapiens

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cagttatatg gtatgatgga agtgataaat actatgtaga ctccgtgaag ggccgattca 180
ccatctccag agacaattct aaaaacacgc tctatctgca aatgaacagc ctgagagccg 240
aggacacggc tgtgtattac tgtgcgagag atcgcagcag tggctggtac tggtcctgcg 300
actcctgggg ccagggaacc ctggtcattg tctcctca 338

<210> 17
<211> 117
<212> PRT
<213> Homo sapiens

<400> 17
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 1               5                  10                  15
Thr Ser Ser Asp Val Gly Gly Tyr Asn Tyr Val Ser Trp Tyr Gln Gln
            20                  25                  30
His Pro Gly Lys Ala Pro Lys Leu Met Ile Tyr Asp Val Ser Asp Arg
        35                  40                  45
Pro Ser Gly Val Ser Asn Arg Phe Ser Gly Ser Lys Ser Gly Asn Thr
    50                  55                  60
Ala Ser Leu Thr Ile Ser Gly Leu Gln Ala Glu Asp Glu Ala Asp Tyr
65                  70                  75                  80
Tyr Cys Ser Ser Tyr Thr Ser Ser Ser Ser Val Val Phe Gly Gly Gly
                85                  90                  95
Thr Lys Leu Thr Val Leu Gly Gln Pro Lys Ala Ala Pro Ser Val Thr
            100                 105                 110
Leu Phe Pro Pro Pro
        115
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<210> 18
<211> 358
<212> DNA
<213> Homo sapiens

<400> 18
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tgacgttggt ggttataact atgtctcctg gtaccaacag cacccaggca aagcccccaa 120
actcatgatt tatgatgtca gtgatcggcc ctcaggggtt tctaatcgct tctctggctc 180
caagtctggc aacacggcct ccctgaccat ctctgggctc caggctgagg acgaggctga 240

ttattactgc agctcatata caagcagcag ctctgtggta ttcggcggag ggaccaagct 300
gaccgtccta ggtcagccca aggctgcccc ctcggtcact ctgttcccgc ctccaagg 358

<210> 19
<211> 120
<212> PRT
<213> Mus musculus

<400> 19
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Phe Val Lys Ile Ser Cys Lys Ala Ser Gly Tyr Thr Phe Thr Asn Tyr
20 25 30
Asp Leu Asn Trp Val Arg Gln Arg Pro Gly Gln Gly Leu Glu Trp Ile
35 40 45
Gly Trp Ile Tyr Pro Gly Asn Asp Asn Thr Lys Tyr Asn Glu Lys Phe
50 55 60
Lys Gly Leu Ala Ser Leu Thr Ala Asp Lys Ser Ser Thr Thr Ala Tyr
65 70 75 80
Leu His Leu Ser Ser Leu Thr Ser Glu Ser Ser Ala Val Tyr Phe Cys
85 90 95
Ala Arg Gly Leu Pro Arg Gly Trp Tyr Phe Asp Val Trp Gly Ala Gly
100 105 110
Thr Thr Val Thr Val Ser Ser Ala
115 120

<210> 20
<211> 360
<212> DNA
<213> Mus musculus

<400> 20
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cctggacagg gccttgagtg gattggatgg atttatcctg gaaatgataa tactaagtac 180
aatgagaagt tcaagggcct ggcctcactg actgcagaca agtcctccac cacagcctac 240
ttgcatctca gcagcctgac ttctgagagc tctgcagtct atttctgtgc aagagggtta 300
cctaggggct ggtacttcga tgtctggggc gcagggacca cggtcaccgt ctcctcagct 360

<210> 21
<211> 101
<212> PRT
<213> Mus musculus

<400> 21
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20 25 30
Val Ser Trp Tyr Gln Gln Lys Pro Glu Gln Ser Pro Lys Leu Leu Ile
35 40 45
Tyr Gly Ala Ser Asn Arg Tyr Thr Gly Val Pro Asp Arg Phe Thr Gly
50 55 60
Ser Gly Ser Ala Thr Asp Phe Thr Leu Thr Ile Ser Ser Val Gln Ala
65 70 75 80

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Glu Asp Leu Ala Asp Tyr His Cys Gly Gln Gly Tyr Ser Tyr Pro Tyr
                85                  90                  95
Thr Phe Gly Gly Gly
            100
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<210> 22
<211> 303
<212> DNA
<213> Mus musculus

<400> 22
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gagcagtctc ctaaactgct gatatacggg gcatccaacc ggtacactgg ggtccccgat 180
cgcttcacag gcagtggatc tgcaacagat ttcactctga ccatcagcag tgtgcaggct 240
gaagaccttg cagattatca ctgtggacag ggttacagct atccgtacac gttcggaggg 300
ggg 303

<210> 23
<211> 101
<212> PRT
<213> Mus musculus

<400> 23
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Glu Thr Ile Thr Ile Asn Cys Arg Ala Ser Lys Ser Ile Ser Lys Tyr
            20                  25                  30
Leu Ala Trp Tyr Gln Glu Arg Pro Gly Lys Thr Asn Lys Leu Leu Ile
        35                  40                  45
Tyr Ser Gly Ser Thr Leu Gln Ser Gly Ile Pro Ser Arg Phe Ser Gly
    50                  55                  60
Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser Ser Leu Glu Pro
65                  70                  75                  80
Glu Asp Phe Ala Met Tyr Tyr Cys Gln Gln His Asn Glu Tyr Pro Tyr
                85                  90                  95
Thr Phe Gly Gly Gly
            100
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<210> 24
<211> 303
<212> DNA
<213> Mus musculus

<400> 24
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ggaaaaacta ataagcttct tatctactct ggatccactt tgcaatctgg aattccatca 180
aggttcagtg gcagtggatc tggtacagat ttcactctca ccatcagtag cctggagcct 240
gaagattttg caatgtatta ctgtcaacag cataatgaat acccgtatac gttcggaggg 300
ggg 303

<210> 25
<211> 124
<212> PRT

<213> Homo sapiens

<400> 25
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Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly Phe Ser Phe Ile Asp Tyr
            20   25   30
Ala Met Ser Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Val
        35   40   45
Ser Ser Leu Ser Gly Asp Ser Gly Ser Ser Tyr Tyr Ala Asp Ser Val
    50   55   60
Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ser Lys Ser Thr Val Phe
65   70   75   80
Leu Gln Leu Ser Ser Leu Arg Ala Glu Asp Thr Ala Ile Tyr Tyr Cys
                85   90   95
Ala Gln Glu Thr Gly Pro Gln Arg Arg Trp Gly Gln Gly Thr Leu Val
            100   105   110
Thr Val Ser Ser Gly Ser Ala Ser Ala Pro Thr Leu
        115   120

<210> 26
<211> 372
<212> DNA
<213> Homo sapiens

<400> 26
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ccagggaagg gactggagtg ggtctcaagt cttagtggtg atagtggtag ttcatattat 180
gcagactccg tgaagggccg attcaccatc tccagagaca attccaagag cacggtgttt 240
ctgcaactga gcagcctgag agccgaggac acggccatat attactgtgc gcaggagacc 300
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gccccaaccc tt   372

<210> 27
<211> 116
<212> PRT
<213> Homo sapiens

<400> 27
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 1   5   10   15
Asp Arg Val Thr Ile Thr Cys Arg Ala Ser Gln Ser Ile Ser Ser Trp
            20   25   30
Leu Ala Trp Tyr Gln Gln Lys Pro Gly Lys Ala Pro Lys Leu Leu Ile
        35   40   45
Tyr Lys Ala Phe Asn Leu Glu Ser Gly Val Pro Ser Arg Phe Arg Gly
    50   55   60
Ser Gly Ser Gly Thr Glu Phe Thr Leu Thr Ile Ser Ser Leu Gln Pro
65   70   75   80
Asp Asp Ser Ala Thr Tyr Tyr Cys Gln Gln Tyr Ser Ser Tyr Pro Leu
                85   90   95
Thr Phe Gly Gly Gly Thr Lys Val Asp Ile Lys Arg Thr Val Ala Ala
            100   105   110
Pro Ser Val Phe
        115

<210> 28
<211> 348
<212> DNA
<213> Homo sapiens

<400> 28
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atcacttgcc gggccagtca gagtattagt agctggttgg cctggtatca gcagaaacca 120
gggaaagccc ctaaactcct gatctataag gcgtttaatt tagaaagtgg ggtcccatca 180
aggttcagag gcagtggctc tgggacagaa ttcactctca ccatcagcag cctgcagcct 240
gatgattctg caacttatta ctgccagcag tatagtagtt acccccctcac tttcggcgga 300
gggaccaagg tggacattaa acgaactgtg gctgcaccat ctgtcttc 348

<210> 29
<211> 106
<212> PRT
<213> Homo sapiens

<400> 29
Arg Lys Glu Ala Ser Val Lys Val Ser Cys Lys Ala Ser Gly Tyr Thr
 1   5   10   15
Phe Thr Gly Tyr Tyr Met His Trp Val Arg Gln Ala Pro Gly Gln Gly
            20   25   30
Leu Glu Trp Met Gly Trp Ile Asn Pro Asn Ser Gly Gly Thr Asn Tyr
        35   40   45
Ala Gln Lys Phe Gln Gly Arg Val Thr Met Thr Arg Asp Thr Ser Ile
    50   55   60
Ser Thr Ala Tyr Met Glu Leu Ser Arg Leu Arg Ser Asp Asp Thr Ala
65   70   75   80
Val Tyr Tyr Cys Ala Arg Asp Arg Ser Tyr Pro Gly Arg Asn Tyr Phe
                85   90   95
Asp Tyr Trp Gly Gln Gly Thr Leu Val Thr
            100   105

<210> 30
<211> 327
<212> DNA
<213> Homo sapiens

<400> 30
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accggctact atatgcactg ggtgcgacag gcccctggac aagggcttga gtggatggga 120
tggatcaacc ctaacagtgg tggcacaaac tatgcacaga agtttcaggg cagggtcacc 180
atgaccaggg acacgtccat cagcacagcc tacatggagc tgagcaggct gagatctgac 240
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tactggggcc agggaaccct ggtcacc 327

<210> 31
<211> 101
<212> PRT
<213> Homo sapiens

<400> 31
Glu Ile Val Leu Thr Gln Ser Pro Gly Thr Leu Ser Leu Ser Pro Gly

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 1               5                  10                  15
Glu Arg Ala Thr Leu Ser Cys Arg Ala Ser Gln Ser Val Ser Ser Ser
            20                  25                  30
Tyr Leu Ala Trp Tyr Gln Gln Lys Pro Gly Gln Ala Pro Arg Leu Leu
        35                  40                  45
Ile Tyr Gly Ala Ser Ser Arg Ala Thr Gly Ile Pro Asp Arg Phe Ser
    50                  55                  60
Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser Arg Leu Glu
65                  70                  75                  80
Pro Glu Asp Phe Ala Val Tyr Tyr Cys Gln Gln Tyr Gly Ser Ser His
                85                  90                  95
Thr Phe Gly Gln Gly
            100
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<210> 32
<211> 303
<212> DNA
<213> Homo sapiens

<400> 32
gaaattgtgt tgacgcagtc tccaggcacc ctgtctttgt ctccagggga aagagccacc 60
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cctggccagg ctcccaggct cctcatctat ggtgcatcca gcagggccac tggcatccca 180
gacaggttca gtggcagtgg gtctgggaca gacttcactc tcaccatcag cagactggag 240
cctgaagatt ttgcagtgta ttactgtcag cagtatggta gctctcacac ttttggccag 300
ggg 303

<210> 33
<211> 109
<212> PRT
<213> Homo sapiens

<400> 33
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Gly Leu Val Lys Pro Gly Gly Ser Leu Arg Leu Ser Cys Ala Ala Ser
 1               5                  10                  15
Gly Phe Thr Phe Ser Asp Tyr Tyr Met Ser Trp Ile Arg Gln Ala Pro
            20                  25                  30
Gly Lys Gly Leu Glu Trp Val Ser Tyr Ile Ser Ser Ser Ser Ser Tyr
        35                  40                  45
Thr Asn Tyr Ala Asp Ser Val Lys Gly Arg Phe Thr Ile Ser Arg Asp
    50                  55                  60
Asn Ala Lys Asn Ser Leu Tyr Leu Gln Met Asn Ser Leu Arg Ala Glu
65                  70                  75                  80
Asp Thr Ala Val Tyr Tyr Cys Ala Arg Asp Arg Ser Ser Ser Ser Trp
                85                  90                  95
Tyr Tyr Tyr Tyr Tyr Gly Met Asp Val Trp Gly Gln Gly
            100                 105
```

<210> 34
<211> 329
<212> DNA
<213> Homo sapiens

<400> 34
gaggcttggt caagcctgga gggtccctga gactctcctg tgcagcctct ggattcacct 60

tcagtgacta ctacatgagc tggatccgcc aggctccagg gaaggggctg gagtgggttt 120
catacattag tagtagtagt agttacacaa actacgcaga ctctgtgaag ggccgattca 180
ccatctccag agacaacgcc aagaactcac tgtatctgca aatgaacagc ctgagagccg 240
aggacacggc tgtgtattac tgtgcgagag atcggtcgag cagcagctgg tactactact 300
actacggtat ggacgtctgg ggccaaggg 329

<210> 35
<211> 102
<212> PRT
<213> Homo sapiens

<400> 35
Asp Ile Gln Met Thr Gln Ser Pro Ser Ser Leu Ser Ala Ser Val Gly
 1   5   10   15
Asp Arg Val Thr Ile Thr Cys Arg Ala Ser Gln Gly Ile Ser Asn Tyr
            20   25   30
Leu Ala Trp Tyr Gln Gln Lys Pro Gly Lys Val Pro Lys Leu Leu Ile
        35   40   45
Tyr Ala Ala Ser Thr Leu Gln Ser Gly Val Pro Ser Arg Phe Asn Gly
    50   55   60
Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser Ser Leu Gln Pro
65   70   75   80
Glu Asp Val Ala Thr Tyr Tyr Cys Gln Lys Tyr Asn Lys Cys Pro Ser
                85   90   95
His Phe Arg Gly Arg Asp
            100

<210> 36
<211> 306
<212> DNA
<213> Homo sapiens

<400> 36
gacatccaga tgacccagtc tccatcctcc ctgtctgcat ctgtaggaga cagagtcacc 60
atcacttgcc gggcgagtca gggcattagc aattatttag cctggtatca gcagaaacca 120
gggaaagttc ctaagctcct gatctatgct gcatccactt tgcaatcagg ggtcccatct 180
cggttcaatg gcagtggatc tgggacagat ttcactctca ccatcagcag cctgcaacct 240
gaagatgttg caacttatta ctgtcaaaag tataacaagt gcccctctca ctttcggggg 300
agggac 306

<210> 37
<211> 105
<212> PRT
<213> Homo sapiens

<400> 37
Asp Ile Ala Met Thr Gln Ser Pro Asp Ser Leu Ala Val Ser Leu Gly
 1   5   10   15
Glu Arg Ala Thr Ile Asn Cys Lys Ser Ser Arg Ser Val Leu Phe Ser
            20   25   30
Ser Asn Asn Asn Asn Tyr Leu Ala Trp Tyr Gln Gln Lys Pro Gly Gln
        35   40   45
Pro Pro Lys Leu Leu Ile Tyr Trp Ala Ser Thr Arg Glu Ser Gly Val
    50   55   60
Pro Asp Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr
65   70   75   80

```
Ile Ser Ser Leu Gln Ala Glu Asp Val Ala Val Tyr Tyr Cys Gln Gln
                85                  90                  95
Tyr Tyr Ser Thr Pro Ile Thr Phe Gly
            100                 105


<210> 38
<211> 315
<212> DNA
<213> Homo sapiens

<400> 38
gacatcgcga tgacccagtc tccagactcc ctggcagtgt ctctgggcga gagggccacc 60
atcaactgca agtccagccg gagtgtttta ttcagctcca acaataacaa ctacttagct 120
tggtaccagc agaaaccagg acagcctcct aagctactca tttactgggc atctacccgg 180
gaatccgggg tccctgaccg attcagtggc agcgggtctg ggacagattt cactctcacc 240
atcagcagcc tgcaggctga agatgtggca gtttattact gtcagcaata ttatagtact 300
ccaatcacct tcggc                                                  315

<210> 39
<211> 101
<212> PRT
<213> Mus musculus

<400> 39
Asp Ile Val Met Thr Gln Ser His Lys Phe Met Ser Thr Ser Val Gly
 1               5                  10                  15
Asp Arg Val Ser Ile Thr Cys Lys Ala Ser Gln Asp Val Ser Thr Ala
            20                  25                  30
Val Ala Trp Tyr Gln Gln Lys Pro Gly Gln Ser Pro Lys Leu Leu Ile
        35                  40                  45
Tyr Ser Ala Ser Tyr Arg Tyr Thr Gly Val Pro Asp Arg Phe Thr Gly
    50                  55                  60
Ser Gly Ser Gly Thr Asp Phe Thr Phe Thr Ile Ser Ser Val Gln Ala
65                  70                  75                  80
Glu Asp Leu Ala Val Tyr Tyr Cys Gln Gln His Tyr Thr Thr Pro Leu
                85                  90                  95
Thr Phe Gly Ala Gly
            100


<210> 40
<211> 303
<212> DNA
<213> Mus musculus

<400> 40
gacatcgtaa tgacgcagtc tcacaaattc atgtccactt cagtaggaga cagggtcagc 60
atcacctgca aggccagtca ggatgtgagt actgctgtag cctggtatca acagaaacca 120
gcacaatctc ctaaactact gatttactcg gcatcctacc ggtacactgg agtccctgat 180
cgcttcactg gcagtggatc tgggacggat ttcactttca ccatcagcag tgtgcaggct 240
gaagacctgg cagtttatta ctgtcagcaa cattatacta ctccgctcac gttcggtgct 300
ggg                                                              303

<210> 41
<211> 101
<212> PRT
```

<213> Mus musculus

<400> 41

```
Asp Ile Val Met Thr Gln Ser His Lys Phe Met Ser Thr Ser Val Gly
 1               5                  10                  15
Asp Arg Val Ser Ile Thr Cys Lys Ala Ser Gln Asp Val Ser Thr Ala
            20                  25                  30
Val Ala Trp Tyr Gln Gln Lys Pro Gly Gln Ser Pro Lys Leu Leu Ile
        35                  40                  45
Tyr Ser Ala Ser Tyr Arg Tyr Thr Gly Val Pro Asp Arg Phe Thr Gly
    50                  55                  60
Ser Gly Ser Gly Thr Asp Phe Thr Phe Thr Ile Ser Ser Val Gln Ala
65                  70                  75                  80
Glu Asp Leu Ala Val Tyr Tyr Cys Gln Gln His Tyr Thr Thr Pro Leu
                85                  90                  95
Thr Phe Gly Ala Gly
            100
```

<210> 42
<211> 303
<212> DNA
<213> Mus musculus

<400> 42

```
gacatcgtaa tgacgcagtc tcacaaattc atgtccactt cagtaggaga cagggtcagc 60
atcacctgca aggccagtca ggatgtgagt actgctgtag cctggtatca acagaaacca 120
ggacaatctc ctaaactact gatttactcg gcatcctacc ggtacactgg agtccctgat 180
cgcttcactg gcagtggatc tgggacggat ttcactttca ccatcagcag tgtgcaggct 240
gaagacctgg cagtttatta ctgtcagcaa cattatacta ctccgctcac gttcggtgct 300
ggg                                                               303
```

<210> 43
<211> 108
<212> PRT
<213> Mus musculus

<400> 43

```
Asp Val Gln Ile Thr Gln Ser Pro Ser Tyr Leu Ala Ala Ser Pro Gly
 1               5                  10                  15
Glu Thr Ile Thr Ile Asn Cys Arg Ala Ser Lys Ser Ile Ser Lys Tyr
            20                  25                  30
Leu Ala Trp Tyr Gln Glu Lys Pro Gly Lys Thr Asn Lys Leu Leu Ile
        35                  40                  45
Tyr Ser Gly Ser Thr Leu Gln Ser Gly Ile Pro Ser Arg Phe Ser Gly
    50                  55                  60
Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser Ser Leu Glu Pro
65                  70                  75                  80
Glu Asp Phe Ala Met Tyr Tyr Cys Gln Gln His Asn Glu Tyr Pro Tyr
                85                  90                  95
Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys Arg
            100                 105
```

<210> 44
<211> 324
<212> DNA

<213> Mus musculus

<400> 44
gatgtccaga taacccagtc tccatcttat cttgctgcat ctcctggaga aaccattact 60
attaattgca gggcaagtaa gagcattagc aaatatttag cctggtatca agagaaacct 120
gggaaaacta ataagcttct tatctactct ggatccactt tgcaatctgg aattccatca 180
aggttcagtg gcagtggatc tggtacagat ttcactctca ccatcagtag cctggagcct 240
gaagattttg caatgtatta ctgtcaacag cataatgaat acccgtacac gttcggaggg 300
gggaccaagc tggaaataaa acgg 324

<210> 45
<211> 108
<212> PRT
<213> Mus musculus

<400> 45
Asp Ile Gln Met Thr Gln Ser Pro Ser Ser Leu Ser Ala Ser Leu Gly
 1   5   10   15
Glu Arg Val Ser Leu Thr Cys Arg Ala Ser Gln Asp Ile Gly Ser Ser
            20   25   30
Leu Asn Trp Leu Gln Gln Glu Pro Asp Gly Thr Ile Lys Arg Leu Ile
        35   40   45
Tyr Ala Thr Ser Ser Leu Asp Ser Gly Val Pro Lys Arg Phe Ser Gly
    50   55   60
Ser Arg Ser Gly Ser Asp Tyr Ser Leu Thr Ile Ser Ser Leu Glu Ser
65   70   75   80
Glu Asp Phe Val Asp Tyr Tyr Cys Leu Gln Tyr Ala Ser Phe Pro Tyr
                85   90   95
Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys Arg
            100   105

<210> 46
<211> 324
<212> DNA
<213> Mus musculus

<400> 46
gacatccaga tgacccagtc tccatcctcc ttatctgcct ctctgggaga aagagtcagt 60
ctcacttgtc gggcaagtca ggacattggt agtagcttaa actggcttca gcaggaacca 120
gatggaacta ttaaacgcct gatctacgcc acatccagtt tagattctgg tgtccccaaa 180
aggttcagtg gcagtaggtc tgggtcagat tattctctca ccatcagcag ccttgagtct 240
gaagattttg tagactatta ctgtctacaa tatgctagtt ttccgtacac gttcggaggg 300
gggaccaagc tggaaataaa acgg 324

<210> 47
<211> 107
<212> PRT
<213> Mus musculus

<400> 47
Gln Ile Val Leu Thr Gln Ser Pro Ala Ile Met Ser Ala Ser Pro Gly
 1   5   10   15
Glu Lys Val Thr Ile Ser Cys Ser Ala Ser Ser Ser Val Ser Tyr Met
            20   25   30
Tyr Trp Tyr Gln Gln Lys Pro Gly Ser Ser Pro Lys Pro Trp Ile Tyr
        35   40   45

```
Arg Thr Ser Asn Leu Ala Ser Gly Val Pro Ala Arg Phe Ser Gly Ser
    50                  55                  60
Gly Ser Gly Thr Ser Tyr Ser Leu Thr Ile Ser Ser Met Glu Ala Glu
65                  70                  75                  80
Asp Ala Ala Thr Tyr Tyr Cys Gln Gln Tyr His Ser Tyr Pro Leu Thr
                85                  90                  95
Phe Gly Ala Gly Thr Lys Leu Glu Leu Lys Arg
            100                 105
```

<210> 48
<211> 321
<212> DNA
<213> Mus musculus

<400> 48
caaattgttc tcacccagtc tccagcaatc atgtctgcat ctccagggga gaaggtcacc 60
atatcctgca gtgccagctc aagtgtaagt tacatgtact ggtaccagca gaagccagga 120
tcctccccca aaccctggat ttatcgcaca tccaacctgg cttctggagt ccctgctcgc 180
ttcagtggca gtgggtctgg gacctcttac tctctcacaa tcagcagcat ggaggctgaa 240
gatgctgcca cttattactg ccagcagtat catagttacc cactcacgtt cggtgctggg 300
accaagctgg agctgaaacg g 321

<210> 49
<211> 124
<212> PRT
<213> Homo sapiens

<400> 49
```
Glu Val Gln Leu Val Glu Ser Gly Gly Gly Leu Val Gln Pro Gly Gly
 1               5                  10                  15
Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly Phe Thr Phe Ser Ser Tyr
            20                  25                  30
Trp Met Thr Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Met Val
        35                  40                  45
Ala Asn Ile Lys Lys Asp Gly Ser Glu Lys Ser Tyr Val Asp Ser Val
    50                  55                  60
Lys Gly Arg Phe Thr Thr Ser Arg Asp Asn Ala Lys Asn Ser Leu Tyr
65                  70                  75                  80
Leu Gln Met Asn Ser Leu Arg Ala Glu Asp Thr Ala Val Tyr Tyr Cys
                85                  90                  95
Ala Arg Pro Asn Cys Gly Gly Asp Cys Tyr Leu Pro Trp Tyr Phe Asp
            100                 105                 110
Leu Trp Gly Arg Gly Thr Leu Val Thr Val Ser Ser
        115                 120
```

<210> 50
<211> 372
<212> DNA
<213> Homo sapiens

<400> 50
gaggtgcagc tggtggagtc tgggggaggc ttggtccagc ctgggggtc cctgagactc 60
tcctgtgcag cctctggatt cacctttagt agctattgga tgacctgggt ccgccaggct 120
ccagggaagg ggctggagtg ggtggccaac ataaagaaag atggaagtga gaaatcctat 180
gtggactctg tgaagggccg attcaccacc tccagagaca acgccaagaa ctcactgtat 240

ctgcaaatga acagcctgag agccgaggac acggctgtgt attactgtgc gagacccaat 300
tgtggtggtg actgctattt accatggtac ttcgatctct ggggccgtgg caccctggtc 360
actgtctcct ca 372

<210> 51
<211> 122
<212> PRT
<213> Homo sapiens

<400> 51
Asp Ile Val Met Thr Gln Ser Pro Asp Ser Leu Ala Val Ser Leu Gly
 1   5   10   15
Glu Arg Ala Thr Ile Asn Cys Lys Ser Ser Gln Ser Val Leu Tyr Ser
            20   25   30
Ser Asn Asn Lys Asn Tyr Leu Ala Trp Tyr Gln Gln Lys Pro Gly Gln
        35   40   45
Pro Pro Lys Leu Leu Ile Tyr Trp Ala Ser Thr Arg Glu Ser Gly Val
    50   55   60
Pro Asp Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr
65   70   75   80
Ile Ser Ser Leu Gln Ala Glu Asp Val Ala Val Tyr Tyr Cys Gln Gln
                85   90   95
Tyr Tyr Asn Thr Pro Gln Ala Phe Gly Gln Gly Thr Lys Val Glu Ile
            100   105   110
Lys Arg Thr Val Ala Ala Pro Ser Val Phe
        115   120

<210> 52
<211> 366
<212> DNA
<213> Homo sapiens

<400> 52
gacatcgtga tgacccagtc tccagactcc ctggctgtgt ctctgggcga gagggccacc 60
atcaactgca agtccagcca gagtgtttta tacagctcca acaataagaa ctacttagct 120
tggtaccagc agaaaccagg acagcctcct aaactactca tttactgggc atctacccgg 180
gaatccgggg tccctgaccg attcagtggc agcgggtctg ggacagattt cactctcacc 240
atcagcagcc tgcaggctga agatgtggca gtttattact gtcagcaata ttataatact 300
cctcaggcgt tcggccaagg gaccaaggtg gaaatcaaac gaactgtggc tgcaccatct 360
gtcttc 366

<210> 53
<211> 78
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 53
actcccaagt cggctcgctt tctcttcagt gacaaacaca gacatagaac attcaccatg 60
ggatggagct gtatcact 78

<210> 54
<211> 47
<212> DNA

<213> Artificial Sequence

<220>
<223> primer

<400> 54
actgactctc ttaattaaga ctcacctgag gagactgtga gagtggt 47

<210> 55
<211> 48
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 55
ttggcgcgcc aaagactcag cctggacatg atgtcctctg ctcagttc 48

<210> 56
<211> 43
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 56
atagtttagc ggccgcattc ttatctaaca ctctcccctg ttg 43

<210> 57
<211> 155
<212> DNA
<213> Artificial Sequence

<220>
<223> synthetic

<400> 57
gactcggtcc gcccagccac tggaagtcgc cggtgtttcc attcggtgat catcactgaa 60
cacagaggac tcaccatgga gtttgggctg agctgggttt tcctcgttgc tcttttaaga 120
ggtgtccagt gtcaggtgca gctggtggag tctgg 155

<210> 58
<211> 56
<212> DNA
<213> Artificial Sequence

<220>
<223> synthetic

<400> 58
ccttaattaa gacctggaga ggccattctt acctgaggag acggtgacca gggttc 56

<210> 59
<211> 36
<212> DNA

<213> Artificial Sequence

<220>
<223> synthetic

<400> 59
ctagctagcg tcctaggtca gcccaaggct gccccc 36

<210> 60
<211> 36
<212> DNA
<213> Artificial Sequence

<220>
<223> synthetic

<400> 60
atagtttagc ggccgcacct atgaacattc tgtagg 36

<210> 61
<211> 111
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 61
ctagctagcc cgaatttcgg gacaatcttc atcatgacct gctcccctct cctcctcacc 60
cttctcattc actgcacagg gtcctgggcc cagtctgtgt tgacgcagcc g 111

<210> 62
<211> 32
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 62
gggcagcctt gggctgagct aggacggtca gc 32

<210> 63
<211> 393
<212> DNA
<213> Mus musculus

<400> 63
atgatgtcct ctgctcagtt ccttggtctc ctgttgctct gttttcaagg taccagatgt 60
gatatccaga tgacacagac tacatcctcc ctgtctgcct ctctgggaga cagagtcacc 120
atcagttgca gggcaagtca ggacattagc aattatttaa actggtatca gcagaaacca 180
gatggaactg ttaaactcct gatctactac acatcaagat tacactcagg agtcccatca 240
aggttcagtg gcagtgggtc tggaacagat tattctctca ccattagcaa cctggagcaa 300
gaagatattg ccacttactt ttgccaacag ggtaatacgc ttccgtggac gttcggtgga 360
ggcaccaagc tggaaatcaa acgggctgat gct 393

<210> 64

<211> 131
<212> PRT
<213> Mus musculus

<400> 64
Met Met Ser Ser Ala Gln Phe Leu Gly Leu Leu Leu Leu Cys Phe Gln
 1   5   10   15
Gly Thr Arg Cys Asp Ile Gln Met Thr Gln Thr Thr Ser Ser Leu Ser
            20   25   30
Ala Ser Leu Gly Asp Arg Val Thr Ile Ser Cys Arg Ala Ser Gln Asp
        35   40   45
Ile Ser Asn Tyr Leu Asn Trp Tyr Gln Gln Lys Pro Asp Gly Thr Val
    50   55   60
Lys Leu Leu Ile Tyr Tyr Thr Ser Arg Leu His Ser Gly Val Pro Ser
65   70   75   80
Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Tyr Ser Leu Thr Ile Ser
                85   90   95
Asn Leu Glu Gln Glu Asp Ile Ala Thr Tyr Phe Cys Gln Gln Gly Asn
            100   105   110
Thr Leu Pro Trp Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys Arg
        115   120   125
Ala Asp Ala
    130

<210> 65
<211> 429
<212> DNA
<213> Mus musculus

<400> 65
atgggatgga gctgtatcat cctctttttg gtagcagcag ctacaggtgt ccactcccag 60
gtccaactgc agcagcctgg gactgaactg gtgaagcctg gggcttcagt gaagctgtcc 120
tgcaaggctt ctggctacac cttcaccagc tactggatgc actgggtgaa gcagaggcct 180
ggacaaggcc ttgagtggat tggaaatatt aatcctagca atggtggtac taactacaat 240
gagaagttca agagcaaggc cacactgact gtagacaaat cctccagcac agcctacatg 300
cagctcagca gcctgacatc tgaggactct gcggtctatt attgtgcaag acgggcccct 360
tactacggta gtaggaactt tgactactgg ggccaaggca ccactctcac agtctcctca 420
gagagtcag   429

<210> 66
<211> 143
<212> PRT
<213> Mus musculus

<400> 66
Met Gly Trp Ser Cys Ile Ile Leu Phe Leu Val Ala Ala Ala Thr Gly
 1   5   10   15
Val His Ser Gln Val Gln Leu Gln Gln Pro Gly Thr Glu Leu Val Lys
            20   25   30
Pro Gly Ala Ser Val Lys Leu Ser Cys Lys Ala Ser Gly Tyr Thr Phe
        35   40   45
Thr Ser Tyr Trp Met His Trp Val Lys Gln Arg Pro Gly Gln Gly Leu
    50   55   60
Glu Trp Ile Gly Asn Ile Asn Pro Ser Asn Gly Gly Thr Asn Tyr Asn
65   70   75   80
Glu Lys Phe Lys Ser Lys Ala Thr Leu Thr Val Asp Lys Ser Ser Ser

```
                85                  90                  95
Thr Ala Tyr Met Gln Leu Ser Ser Leu Thr Ser Glu Asp Ser Ala Val
            100                 105                 110
Tyr Tyr Cys Ala Arg Arg Ala Pro Tyr Tyr Gly Ser Arg Asn Phe Asp
        115                 120                 125
Tyr Trp Gly Gln Gly Thr Thr Leu Thr Val Ser Ser Glu Ser Gln
    130                 135                 140
```

<210> 67
<211> 138
<212> PRT
<213> Mus musculus

<400> 67

```
Met Gly Trp Arg Trp Ile Phe Leu Phe Leu Leu Ser Gly Thr Ala Gly
 1               5                  10                  15
Val His Cys Gln Val Gln Leu Gln Gln Ser Gly Pro Glu Leu Val Lys
            20                  25                  30
Pro Gly Ala Leu Val Lys Ile Ser Cys Lys Ala Ser Gly Tyr Thr Phe
        35                  40                  45
Thr Ser Tyr Asp Ile Asn Trp Val Lys Gln Arg Pro Gly Gln Gly Leu
    50                  55                  60
Glu Trp Ile Gly Trp Ile Tyr Pro Gly Asp Gly Ser Thr Lys Tyr Asn
65                  70                  75                  80
Glu Lys Phe Lys Gly Lys Ala Thr Leu Thr Ala Asp Lys Ser Ser Ser
                85                  90                  95
Thr Ala Tyr Met Gln Leu Ser Ser Leu Thr Ser Glu Asn Ser Ala Val
            100                 105                 110
Tyr Phe Cys Ala Arg Gly Ala Arg Phe Tyr Trp Tyr Phe Asp Val Trp
        115                 120                 125
Gly Ala Gly Thr Thr Val Thr Val Ser Ser
    130                 135
```

<210> 68
<211> 135
<212> PRT
<213> Mus musculus

<400> 68

```
Met Ala Val Leu Gly Leu Leu Phe Cys Leu Val Thr Phe Pro Ser Cys
 1               5                  10                  15
Val Leu Ser Gln Val Gln Leu Lys Gln Ser Gly Pro Gly Leu Val Gln
            20                  25                  30
Pro Ser Gln Ser Leu Ser Ile Thr Cys Thr Val Ser Gly Phe Ser Leu
        35                  40                  45
Thr Ser Tyr Gly Val His Trp Val Arg Gln Ser Pro Gly Lys Gly Leu
    50                  55                  60
Glu Trp Leu Gly Val Ile Trp Ser Gly Gly Ser Thr Asp Tyr Asn Ala
65                  70                  75                  80
Ala Phe Ile Ser Arg Leu Ser Ile Ser Lys Asp Asn Ser Lys Ser Gln
                85                  90                  95
Val Phe Phe Lys Met Asn Ser Leu Gln Ser Asn Asp Thr Ala Ile Tyr
            100                 105                 110
Tyr Cys Ala Arg Asp Cys Gly Ser Arg Gly Asp Tyr Trp Gly Gln Gly
        115                 120                 125
```

```
Thr Ser Val Thr Val Ser Ser
    130                 135


<210> 69
<211> 143
<212> PRT
<213> Mus musculus

<400> 69
Met Lys Leu Trp Leu Asn Trp Val Phe Leu Leu Thr Leu Leu His Gly
 1               5                  10                  15
Ile Gln Cys Glu Val Lys Leu Val Glu Ser Gly Gly Gly Leu Val Gln
            20                  25                  30
Pro Gly Gly Ser Leu Arg Leu Ser Cys Ala Thr Ser Gly Phe Thr Phe
        35                  40                  45
Ser Asp Phe Tyr Met Glu Trp Val Arg Gln Pro Pro Gly Lys Arg Leu
    50                  55                  60
Glu Trp Ile Ala Ala Ser Arg Asn Lys Ala Asn Asp Tyr Thr Thr Glu
65                  70                  75                  80
Tyr Ser Ala Ser Val Lys Gly Arg Phe Ile Val Ser Arg Asp Thr Ser
                85                  90                  95
Gln Ser Ile Leu Tyr Leu Gln Met Asn Ala Leu Arg Ala Glu Asp Thr
            100                 105                 110
Ala Ile Tyr Tyr Cys Ala Arg Asp Ala Arg Gln Leu Gly Leu Pro Ala
        115                 120                 125
Trp Phe Ala Tyr Trp Gly Gln Gly Thr Leu Val Thr Val Ser Ala
    130                 135                 140


<210> 70
<211> 128
<212> PRT
<213> Mus musculus

<400> 70
Met Glu Ser Gln Thr Leu Val Phe Ile Ser Ile Leu Leu Trp Leu Tyr
 1               5                  10                  15
Gly Ala Asp Gly Asn Ile Val Met Thr Gln Ser Pro Lys Ser Met Ser
            20                  25                  30
Met Ser Val Gly Glu Arg Val Thr Leu Thr Cys Lys Ala Ser Glu Asn
        35                  40                  45
Val Val Thr Tyr Val Ser Trp Tyr Gln Gln Lys Pro Glu Gln Ser Pro
    50                  55                  60
Lys Leu Leu Ile Tyr Gly Ala Ser Asn Arg Tyr Thr Gly Val Pro Asp
65                  70                  75                  80
Arg Phe Thr Gly Ser Gly Ser Ala Thr Asp Phe Thr Leu Thr Ile Ser
                85                  90                  95
Ser Val Gln Ala Glu Asp Leu Ala Asp Tyr His Cys Gly Gln Gly Tyr
            100                 105                 110
Ser Tyr Pro Tyr Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys Arg
        115                 120                 125


<210> 71
<211> 130
<212> PRT
```

<213> Mus musculus

<400> 71
Met Asp Met Arg Ala Pro Ala Gln Ile Phe Gly Phe Leu Leu Leu Leu
 1   5   10   15
Phe Gln Gly Thr Arg Cys Asp Ile Gln Met Thr Gln Ser Pro Ser Ser
            20   25   30
Leu Ser Ala Ser Leu Gly Glu Arg Val Ser Leu Thr Cys Arg Ala Ser
        35   40   45
Gln Asp Ile Gly Ser Ser Leu Asn Trp Leu Gln Gln Glu Pro Asp Gly
    50   55   60
Thr Ile Lys Arg Leu Ile Tyr Ala Thr Ser Ser Leu Asp Ser Gly Val
65   70   75   80
Pro Lys Arg Phe Ser Gly Ser Arg Ser Gly Ser Asp Tyr Ser Leu Thr
                85   90   95
Ile Ser Ser Leu Glu Ser Glu Asp Phe Val Asp Tyr Tyr Cys Leu Gln
            100   105   110
Tyr Ala Ser Ser Pro Tyr Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile
        115   120   125
Lys Arg
    130

<210> 72
<211> 128
<212> PRT
<213> Mus musculus

<400> 72
Met Glu Ser Gln Ile Gln Val Phe Val Phe Val Phe Leu Trp Leu Ser
 1   5   10   15
Gly Val Asp Gly Asp Ile Val Met Thr Gln Ser His Lys Phe Met Ser
            20   25   30
Thr Ser Val Gly Asp Arg Val Ser Ile Thr Cys Lys Ala Ser Gln Asp
        35   40   45
Val Ser Thr Ala Val Ala Trp Tyr Gln Gln Lys Pro Gly Gln Ser Pro
    50   55   60
Lys Leu Leu Ile Tyr Ser Ala Ser Tyr Arg Tyr Thr Gly Val Pro Asp
65   70   75   80
Arg Phe Thr Gly Ser Gly Ser Gly Thr Asp Phe Thr Phe Thr Ile Ser
                85   90   95
Ser Val Gln Ala Glu Asp Leu Ala Val Tyr Tyr Cys Gln Gln His Tyr
            100   105   110
Thr Thr Pro Leu Thr Phe Gly Ala Gly Thr Lys Leu Glu Leu Lys Arg
        115   120   125

<210> 73
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> synthetic

<400> 73
actcccaagt cggtccgctt t   21

<210> 74
<211> 270
<212> DNA
<213> Artificial Sequence

<220>
<223> template

<400> 74
actcccaagt cggtccgctt tctcttcagt gacaaacaca gacatagaac attcaccatg 60
gagtttgggc tgacctggct ttctcttgtt gctattttag aaggtgtcca gtgtgaggtg 120
cagctggtgg agtctggggg aggcttggtc cagcctgggg ggtccctgag actctcctgt 180
gcagcctctg gattcacctt tagtagctat tggatgacct gggtccgcca ggctccaggg 240
aaggggctgg agtgggtggc caacataaag 270

<210> 75
<211> 266
<212> DNA
<213> Artificial Sequence

<220>
<223> template

<400> 75
ctggagtggg tggccaacat aaagaaagat ggaagtgaga aatcctatgt ggactctgtg 60
aagggccgat tcaccacctc cagagacaac gccaagaact cactgtatct gcaaatgaac 120
agcctgagag ccgaggacac ggctgtgtat tactgtgcga gacccaattg tggtggtgac 180
tgctatttac catggtactt cgatctctgg ggccgtggca ccctggtcac tgtctcctca 240
ggtgagtctt aattaagaga gtcagt 266

<210> 76
<211> 18
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 76
actgactctc ttaattag 18

<210> 77
<211> 105
<212> DNA
<213> Artificial Sequence

<220>
<223> 5' primer with leader sequence

<400> 77
ctagctagct caagactcag cctggacatg gtgttgcaga cccaggtctt catttctctg 60
ttgctctgga tctctggtgc ctacggggac atcgtgatga cccag 105

<210> 78
<211> 20
<212> DNA

<213> Artificial Sequence

<220>
<223> 3' primer

<400> 78
gaacgcctga ggagtattat 20

<210> 79
<211> 39
<212> DNA
<213> Artificial Sequence

<220>
<223> 5' primer

<400> 79
ctgatgctac gatggatccg cctccaccaa gggcccatc 39

<210> 80
<211> 42
<212> DNA
<213> Artificial Sequence

<220>
<223> 3' primer

<400> 80
gcatgagtct gacagctgtt tacccggaga cagggagagg ct 42